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Mr. BRASHEAR is also making *two* important astro-photographic *doublets* for the University of Heidelberg, Germany. They are each to be forty centimetres (sixteen inches) clear aperture, and, on account of their large size, we may justly expect them to make an important advance in astronomical photography. Most of the doublets now in use by astronomers are from six to eight inches in aperture, and of comparatively short focal length. The Willard lens of the LICK Observatory, with which so many fine photographs of nebulae, comets, and the Milky Way have been obtained, is only six inches in diameter and 30.82 inches equivalent focal length. The lenses which Dr. MAX WOLF has been using at Heidelberg are of the same order of magnitude. Dr. WOLF is to be congratulated on his new instruments.

W. J. H.

PHOTOGRAPHS OF THE SETTING SUN.

The two plates representing the distorted disc of the setting sun as observed at Mount Hamilton are selected from a series of ten plates, representing the sunsets on sixty different nights in the summer of 1893. The photographs were taken by Mr. A. L. COLTON, as a record of some of the curious effects of atmospheric refraction. A lens of forty-nine inches focus was used, and the original size of the images has been retained. Much of the detail of the original negatives has been lost in the reproduction. The entire series of plates, with a descriptive article by Mr. COLTON, will be included in a forthcoming volume of "Contributions from the LICK Observatory."

A VISIT TO THE OBSERVATORY OF PULKOWA—IMPRESSIONS OF A LITERARY MAN.

[From a Paper by the Vicomte EUGÈNE MELCHIOR DE VOGÜÉ.]

" * * * A troïka ride is the favorite amusement of St. Petersburg society of winter nights, and the one that leaves in the mind of the foreigner the most vivid and novel souvenir. The inns where the Tsiganes sing are the usual object of these nocturnal excursions; sometimes, however, others are suggested; for instance, to the Observatory of Pulkowa, which rises midway between Petersburg and Tsarskoe-Selo, on a hill crowned with pine trees. It is the only elevation on the marshy plains which surround the capital. There lives a little German colony; for they are Germans who keep watch over the Russian heavens.

With a few exceptions, this family of astronomers is recruited in the university at Dorpat, and holds its celestial fief with jealous care. When you enter Pulkowa, you find yourself transported to another world. You might imagine yourself in some calm institute in Goettingen or Jena. Confined in the mysteries of space and time, these modest *savants* work under the direction of their senior member or *doyen*. They live in common a patriarchal life—an honest German life, staid and serious, like that of the stars. Strangers to the noises of the great city and to the interests and passions which surround them, these astronomers have fixed the boundaries of their earthly horizon at the wood of pine trees and the roofs which shelter their households and their books. The only revolutions that they look forward to are those of the firmament; their newspapers are the tables of the Sun and planets; their subject of conversation the theorems of KEPLER, or the excellent recipe of Madame la DOYENNE for smoking the breasts of geese—an artless mixture of humble domestic cares and of the great secrets of the universe. The monks of science mount into their glass palace, wrapped up in warm cloaks, with fur caps on their heads, like the astrologers you see depicted in ancient engravings. The old *savants* conduct their pupils to the top of the tower, into that vast rotunda which revolves upon itself and seems like the poop of a ship, with its masts, its rigging, its instruments of polished brass, and its portholes where the telescopes are pointed. The lamps burn over the books, the compass moves over the charts, the telescope scrutinizes the polar regions, and the calculations of ages are continued. The observers are adding a page to the annals of the sky. At that hour, when everything which makes noise and illusion on the earth is silent, these modest people are truly the masters of the universe. They ordain its destinies; they know from whence it comes, whither it goes, and what it weighs. Grave, and proud of their responsibility,—like their brothers, the sailors,—they watch for us all. They mark the passage of the planet in the unknown, in the midst of the formidable fleets which it crosses in its passage. If some benighted traveler passes in these solitudes, he perceives up there the lights of the crew maneuvering its ærial dome; he wonders if it is not some phantom ship lost on the sea of snow, or else he may imagine that he hears monks assembled in their oratory for matins, who sing by night the praises of the Lord.

But this solitude and this peace are exposed to frequent invasions. If an eclipse is announced, the ladies of Petersburg form a party to go to Pulkowa; they either belong to the Court, or have taken the precaution to have some dignitary in their party; and consequently the Imperial Observatory could not refuse to satisfy their caprices. The troïkas deposit in the temple of science the noisy visitors, who take possession of the telescopes, and demand for their particular use that corner of the heavens where something important is about to happen. They have all these mysteries explained to them; they ferret about in albums of lunar photographs, and their curiosity is excited by the marvels that the old sorcerers tell them. The evening ends with supper of ham and sauerkraut prepared by Madame la DOYENNE, and in listening to one of the young German women play on the piano a sonata of SCHUMANN or WEBER. The joyous band then starts back, enchanted with the contrast between its habits of luxury and the austere simplicity of which it has just taken a glimpse."—*Harpers' Magazine*, Volume 78 (1889), page 851.

THE LUNAR ECLIPSE OF SEPTEMBER 3, 1895.

The observations of this eclipse made by me were almost entirely photographic. The instrument used was a twelve-inch silver on glass reflecting telescope of about forty-five inches focus, carried by the equatorial mounting made for the eighteen-inch reflector already described in a former number of these *Publications*, but recently altered somewhat to overcome, in a measure, the disturbing effects of the wind; the wooden tube has been replaced by three trussed iron pipes, which carry the large mirror at the lower end, and the secondary mirror near the upper end of the now skeleton tube.

As these photographs are the first that have ever been made with the twelve-inch mirror, the results are to be considered as of an experimental character. In all, some twenty-five negatives of the partial and total phases were obtained. CARBUTT'S lantern-slide slow plates ($3\frac{1}{4} \times 4\frac{1}{4}$) were used for the partial phase. All these negatives show that the exposure times (in the neighborhood of 4") were much too long. Probably 0".5 to 1".0 would have been about right.

For the total phase, SEED plates No. 27 were used. From data given by the WILLARD lens at previous eclipses, an expos-